

7RRC Training Day Schedule - Dec 4, 2021

The Auxiliary Gym will be open all day for robot driving practice

	Room 1104 Classroom	Room 1330 Choir Room	Room 1310 Band Room	Room 1800 Classroom	Room 1840 Computer Lab
8:45-9:00	Welcome and Housekeeping in Auditorium				
9:10 – 10:00 Session 1	<i>Project Management and Communication</i> Mark Moulton	<i>Kit of Parts</i> – Gary Baumgarten (Good for experienced teams also)	<i>Scouting For Match Strategy and Alliance Selections</i> with Jacob Lee	<i>Controls, Sensors and Interconnection</i> Paul Ulland	<i>Java Programming Part I - UWL CODERS</i>
10:00 – 10:10	Break				
10:10 – 11:00 Session 2	<i>Leadership Boot Camp- Part 1</i> Steve Bissen and Mark Moulton	<i>Mechanical Quick Build Part 1</i> - Gary Baumgarten	<i>Why should my team use SOLIDWORKS?</i> Betty Baker	<i>Electronics Quick Build 1</i> Willy Hoskins, Erik Mathison	<i>Java Programming Part II - UWL CODERS</i>
11:00 – 11:10	Break				
11:10 – Noon Session 3	<i>Leadership Boot Camp- Part 2</i> Steve Bissen and Mark Moulton	<i>Mechanical Quick Build Part 2</i> - Gary Baumgarten	<i>How to use SOLIDWORKS to quickly change the design of your robot.</i> Betty Baker	<i>Electronics Quick Build 2</i> Willy Hoskins	<i>Game Analysis & Strategic Design – Randy Hafner</i>
Noon – 12:30	Lunch (included)				
12:30 – 1:20 Session 4	<i>Pneumatics- The Muscle of Control</i> – Paul Ulland	Final Assembly with Electrical in Choir Room	<i>Bumpers 101</i> - Austin Lee	Final Assembly with Mechanical in Choir Room	<i>Java - Code, Build, Test - UWL CODERS</i>
1:20 – 1:30	Break				
1:30 – 2:20 Session 5	<i>Scholarships and Internships</i> Duane Lom	Final Assembly with Electrical in Choir Room			<i>Java-GitHub Repository</i>
2:30	Debrief – Create Team & Personal Goals/Action Plan				

Session Descriptions

A summary in about 3-5 sentences that may include directions to prepare for the session (e.g. how to download software and install it with links, etc.).

Project Management & Communication -

We will be discussing some basic principles of project management including setting up task boards and electronic task boards. We will also be exploring Slack and its many uses to communicate.

Leadership Boot Camp -

Everything you wanted to know and more about effective leadership. Very helpful for first time department heads/supervisors.

Scholarships and Internships -

This session is an overview of what scholarships and internships are available through FIRST and how to find them on the FIRST website. This session is especially important for Juniors and Seniors, but all grade levels are welcome.

Bumpers 101 -

Bumpers can be the bane of any team. Learn how to take the pain out of creating them and add some great techniques for making your robot look'in good in blue or red. This is a hands on session. You should plan to bring a stapler (and extra staples) to staple the fabric to the plywood boards.

Kit of Parts -

The Kit of parts is a major source of material you can use to build your Robot. Learn what you can expect to get in the Kit and how to get the most from the resources provided by FIRST. This session discusses the Kickoff Kit, Virtual Kit, FIRST Choice and local part sources.

Mechanical Quick Build -

This set of sessions is a "hands on" chassis build of the Andy Mark AM14U chassis. This session is led by a 9 1/2 season build mentor whose team has used this chassis in several configurations including Pneumatic and omni wheel options. New this year is a 2 hour build contest using 6 of the kits. The red alliance will build against the Blue alliance. Each alliance will have 3 teams composed of 2 builders and a student mentor. The builders must be rookies and the mentor can only instruct not build. Prizes will be awarded. There is a pre-session signup required, and all teams will be provided tools. Each alliance will build one 6 wheel tank drive, one 6 Omni-wheel tank style, and one mecanum wheel robot. Please contact Gary Baumgarten

LeadMentor24021@gmail.com to register or ask questions. The registration deadline is November 23, 2021. You are welcome to bring your own AM14U if you have one available. Other kits will be available for non contest building experience.

Game Analysis & Strategic Design -

Every year FIRST comes up with some incredibly in-depth games and understanding the game is key to designing a robot that plays effectively on the field. Each year the game is different and unique and it evolves throughout the season, is your robot and strategy able to evolve with it.

Controls, Sensors and Interconnection -

There are wires going to and from different components all over an FRC robot. Ever wonder where they go, where they come from and what they are connected to? Join retired Electrical Engineer, an 11 year electrical mentor as he explains the in's and out's of those components and how they all can work together to make an awesome robot.

Electronics Quick Build -

This session is for learning the basic wiring skills for the FRC control systems. The control components will be mounted, although the students will wire the control systems following the wiring diagram and utilizing the 2017 FRC control system manual.

Final Assembly -

During this session the Electronics Quick Build and the Mechanical Quick Build will be melding their parts together to complete a robot.

Pneumatics- The Muscle of Control -

Learn how, why and when you would use Pneumatics. They are a powerful tool in the FRC toolbox but also come with a whole new subsystem.

Why Should My Team Use SOLIDWORKS -

This class will give a brief overview of why it is important for your team to use SOLIDWORKS or some 3D CAD to design your robot. I will show the benefits of taking the time to design your robot upfront so you can send your parts for machining, 3D printing, check tolerances, check the weight and also change parts quickly. For more information email bbaker@ashleyfurniture.com.

How To Use SOLIDWORKS To Quickly Change The Design Of Your Robot -

This class will go a step further to show you how to make changes quickly to your robot. We will talk about importing purchased parts, proper ways to assemble the parts so when you make a change it will update correctly. I will show you how to take weight out of your robot when it is too heavy. We will talk about how to make the parts move on your robot. And I will show you how to reuse your CAD model to draw different variations of your robot quickly and easily. For more information email bbaker@ashleyfurniture.com.

Java Programming -

Java is the programming language of choice for the 7RRC. This requires that you have access to a computer and the web so we can use an online compiler to run example programs and code. Please make a replit account to use the online compiler, the url is down below. If you bring your own laptop you can have Java preloaded if the student wants to or just make sure it can connect to the wifi. All the students participating should have access to a computer and the web or have both Eclipse and the Java JDK installed on their laptops, then should run a "Hello World" program to make sure it works. A "Hello World" program should look something like this:

```
public class Hello {  
    public static void main(String[] args) {  
        System.out.println("Hello World!");  
    }  
}
```

Replit: <https://replit.com/>

Eclipse: Download either the "Eclipse IDE for Java Developers" or use the Eclipse installer tool

<http://www.eclipse.org/downloads/eclipse-packages/>

Java JDK: "Java SE Development Kit 8u151" should work

<http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

Let me know if you or the other participating teams have any questions! We're very excited for this!

For more information contact Bennett Wendorf wendorf5343@uwlax.edu

Java - Code, Build, Test (Robot Project Overview)

1. Using VS Code
2. Using Gradle (and talk about Maven)
3. Using Junit - Testing Java programs with Junit
 1. What is Junit? What is a unit test?
4. Installation of Junit
5. Write a few tests

Github – Put your code in a repository

1. What is github?
2. What is a repository? (master versus local)
3. What is Git?
4. Installation of Github
5. Perform a few basic operation
 - a. Make a repository
 - b. Submit a file
 - c. Another user clone the repository and edit file
 - d. Perform a “pull request” to update master repository